PROTOCOL FOR EDITING DIGITAL HUMPBACK WHALE TAIL FLUKES IMAGES USING ACDSEE 6.0

ACDSee 6.0[1] is a relatively inexpensive software package that some of us at the National Marine Mammal Laboratory use for image browsing, editing and printing. We have found that this newest version from ACDSystems (www.acdsystems.com) has some simple, yet useful features that make it ideal for editing whale photo-identification photos.

Our image editing of humpback whale tail flukes is very quick and straightforward. We convert to 256 grays, then

rotate the image, if necessary

crop it to fill the frame and center the tail flukes

adjust the exposure using *contrast* and *gamma (see definition below)*.

We do not adjust brightness, because it lightens the entire image. Gamma adjustments bring out detail in the mid-tones (shadow areas) of the image, and we adjust contrast to fine-tune the appearance of small marks and gray areas.

The simple editing capability of ACDSee is preferable to some of the more sophisticated (and more expensive) editing packages. For example, after extensive testing we found that "Sharpening" images actually degraded one's ability to interpret the finest scratches and marks on a digital image. A "sharpened" image looks better from a distance, but when magnified, the pixel edges appear to be fuzzy, not sharp, which makes it hard to interpret the fine marks.

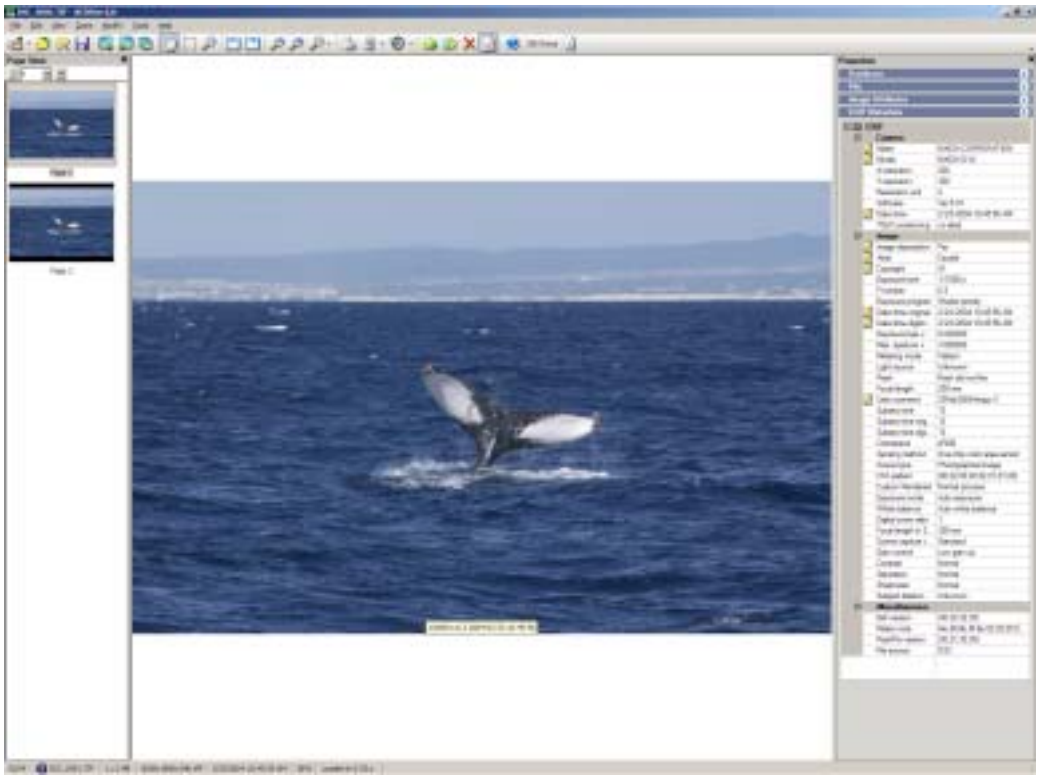
The photos used as examples here were taken during fieldwork in February 2004 as part of the large humpback whale SPLASH project in the southern Gulf of California, Mexico. Jorge Urbán (Universidad Autónoma de Baja California Sur) took the first photo using a Nikon D1X, and Sally Mizroch (National Marine Mammal Lab) took the second photo using a Canon 10D. As you look at the example photos, note that we have edited our own field information into the photo's EXIF metadata. In this case, we've entered Behavioral role in "Image Description", Photo Type (tail flukes, left dorsal, right dorsal) in "Artist", and Encounter Number in "User comment".

Once we edit this information into the metadata, we then export selected information and import it directly into our Access database (see Protocol For Exporting EXIF Metadata into an MS Access Database, developed by Christy

[1] Reference to trade names does not imply endorsement by the National Marine Fisheries Service, NOAA

Sims and Sally Mizroch, http://nmml.afsc.noaa.gov/pdf/NMMLScanningProtocol.pdf).

When testing any digital photo editing software, it's important to make sure the EXIF metadata is conserved through the editing steps as you edit the TIFF files, compress the TIFF files to JPG format, or resize or rename the files. For example, ACDSee conserves the metadata through all these steps, and some versions of Adobe PhotoShop do not conserve these metadata.



Converting multi-page files

This is a multi-page (2-page) tiff file, taken with a Nikon D1X camera at the "Large TIFF" setting. Nikon provides a thumbnail size picture at the same time it provides an uncompressed tiff file. The image file size is 11.3 Mb straight from the camera. We generally do not use the second, small file, and in many cases, we run the Convert option in ACDSee to just capture the first page of the multi-page tiff.

The final file size of this photo, after it was converted to 256 grays and cropped, was less than about 550Kb.

Editing protocol developed by

Modify, Edit Mode

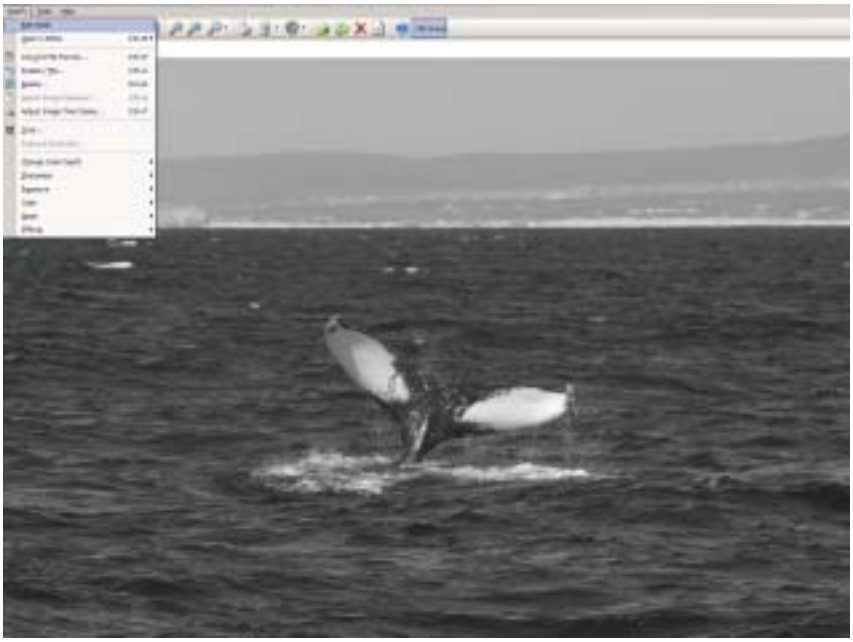
256 Grays

We usually convert the photo to 256 grays before editing because we find that color can be distracting and takes up more file space than is necessary

Edit Panel

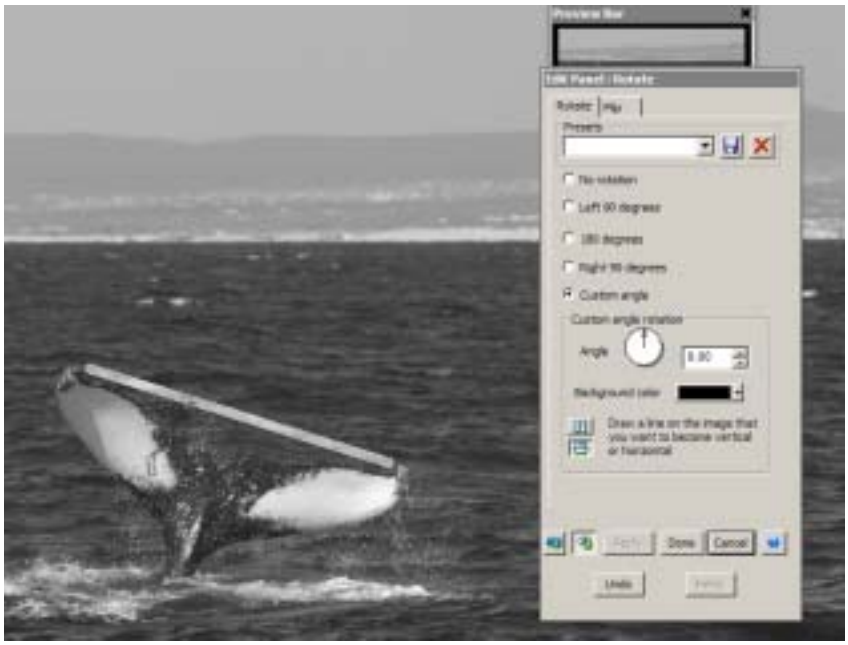
We only use Rotate, Crop and Exposure for flukes. . Because we've converted to 256 grays, we don't do any color editing. Sharpness and Noise adjustments can produce digital artifacts and will make the edges of the marks and scars less defined.

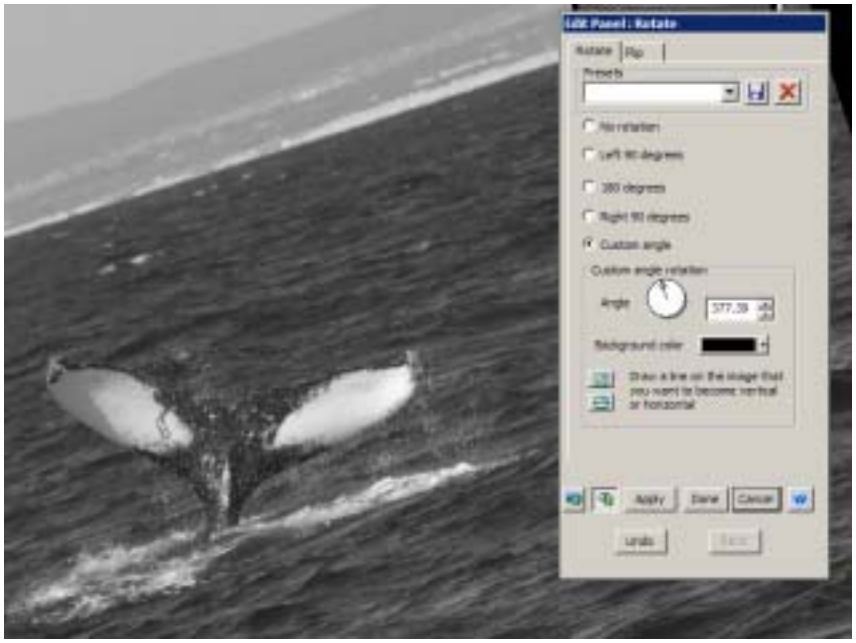
We don't Resize during editing. If we need to resize or compress the photo into jpg format in order to reduce its size for e-mail or web distribution, we use "Convert file format" or "Resize…" for a number of photos at once, using the "Modify" tools.



Rotate

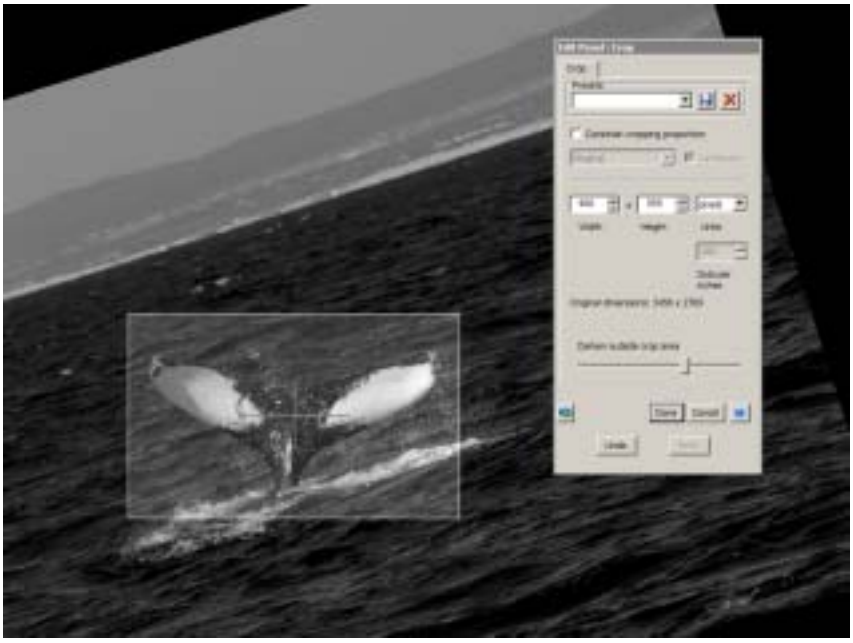
We rotate the tail flukes to a standardized horizontal plane in order to help us match the photos. To rotate, select Custom angle, horizontal, and draw a line (drag the mouse) from fluke tip to fluke tip. This will automatically rotate the flukes to the horizontal plane. In this case, the rotational angle was 377.39º



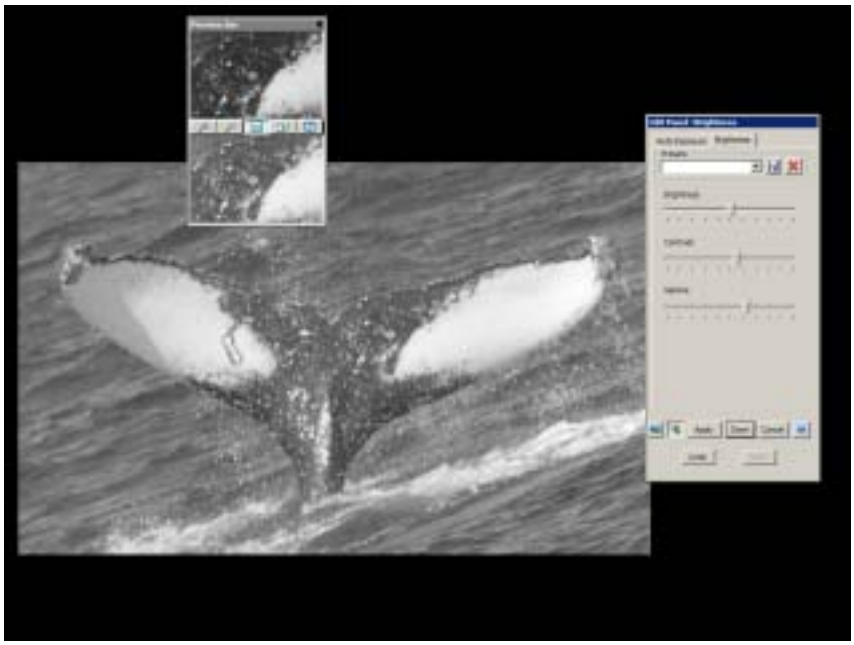


Crop

We crop to fill the entire frame with the centered flukes photograph. We adjust the crop size by eye using the “handles” on the crop frame. The crop tool can remember a preset crop or can be set by exact pixel height and width if desired.



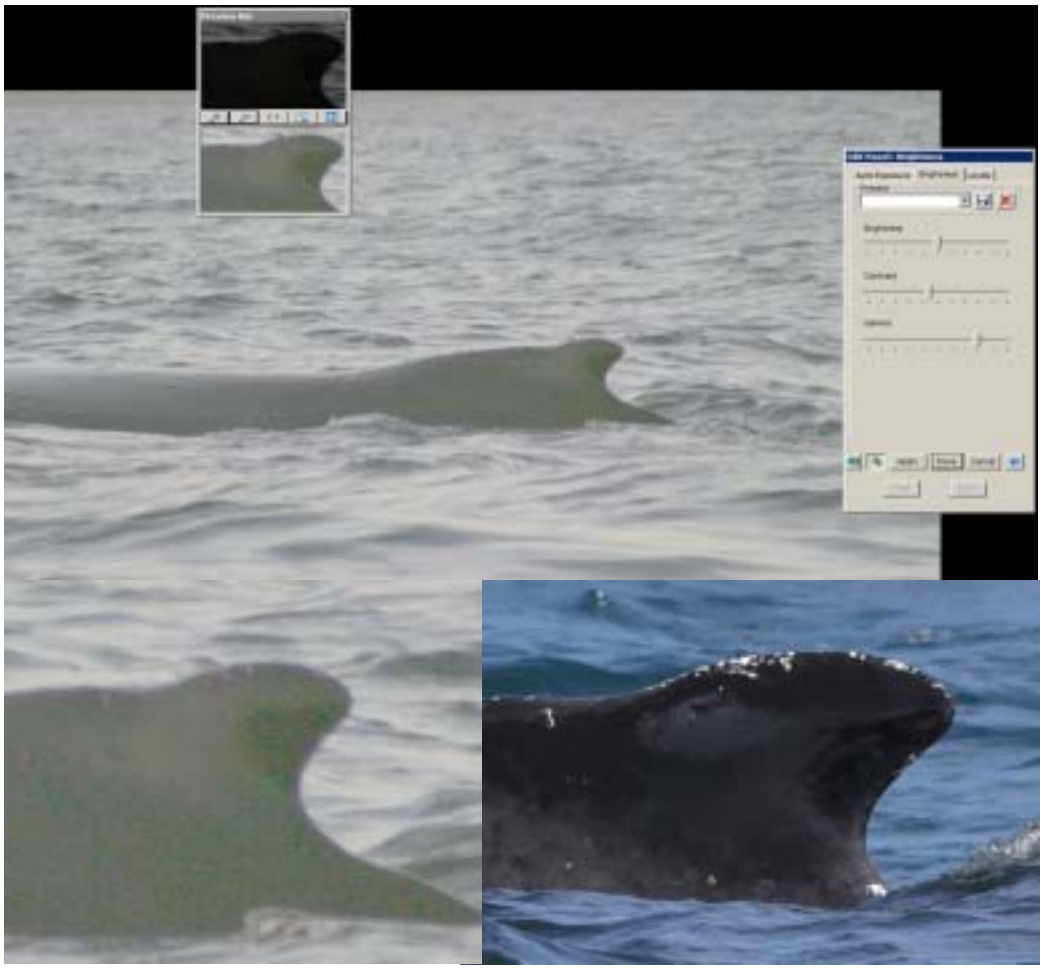
Exposure



We adjust only the gamma and contrast. The brightness control lightens across all the tones of the image, and will cause the fine marks to be washed out. The preview bar (the small magnified box above the image) allows you to magnify selected portions of the image to evaluate fine changes in densities. This photo had a minor adjustment to gamma and an even smaller adjustment to the contrast (the slide bars are near the center of the scale).

Extreme example: Gamma adjustments are very useful to bring out small details in very dark underexposed photographs. This photograph was shot just after sunset using a Canon 10D camera set at the Canon Raw high resolution setting. If we had been shooting at the JPG setting, there would have been no fine detail at all, because the compression algorithm would have "decided" that the whale was completely black.

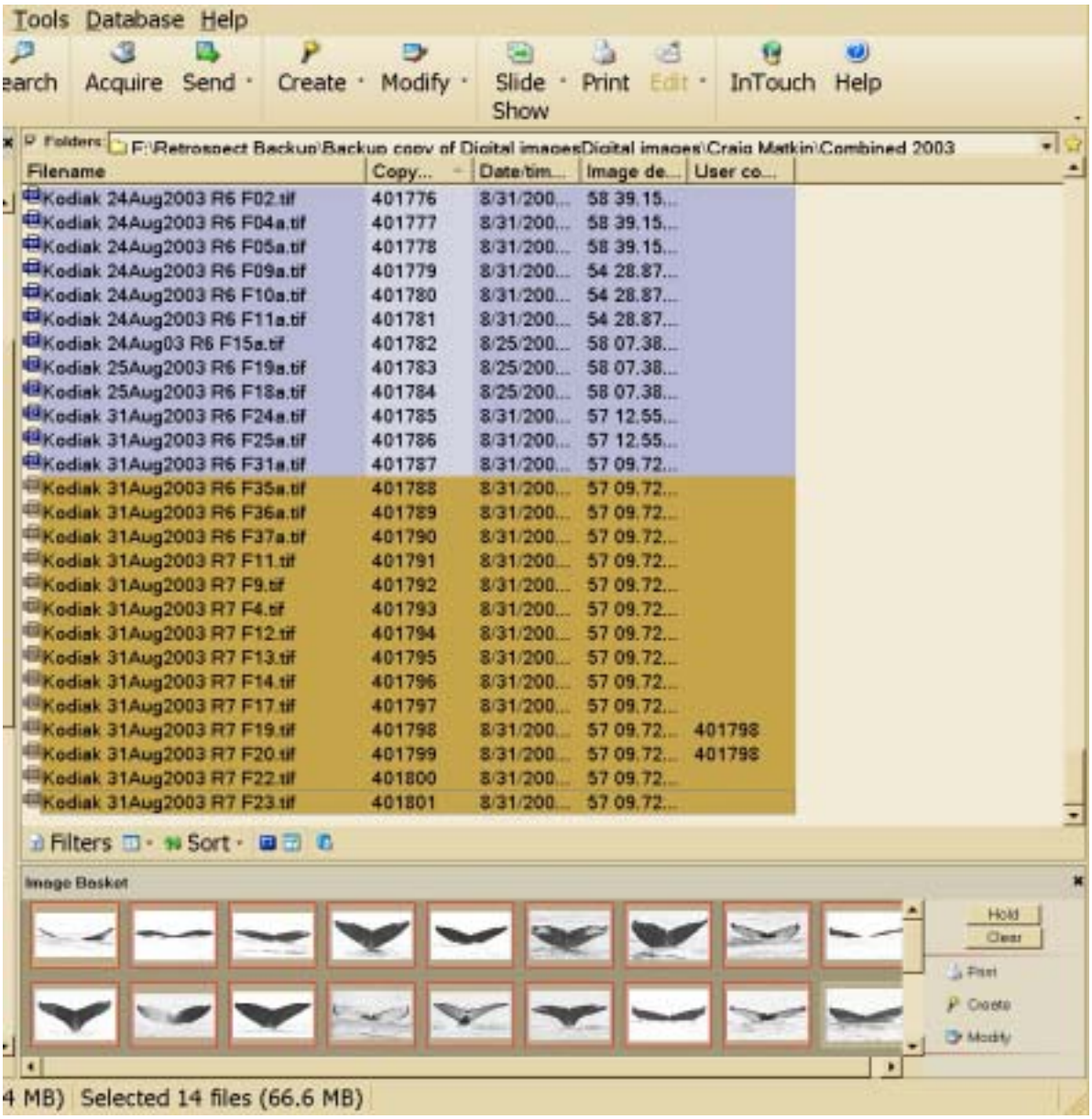
Even though the photograph looked very dark to the eye, after adjusting the gamma, we were able to see many fine marks on the dorsal fin. We were able to confirm the marks the next day when we approached and photographed the same mother and calf.



ACDSee Printing

The following examples show images taken during fieldwork by NGOS in the summer of 2003 in the Kodiak and E. Aleutians areas. The images were scanned at NMML and data was incorporated into the image files' metadata. The user comment field was used to enter biopsy information with the image description containing the Lat/Long of each encounter, and copyright field used for the NMML Access number for our database.

To start printing, select Thumbnails for printing. With ACDSee 6.0, the image basket allows you to added images from various folders into the image basket to print. This is done by selecting "hold" one your chosen thumbnails are pulled into the image basket. From the image basket, choose "print" to go through the print setup steps.



Contact Sheet

The Contact Sheet setting allows for you to coordinate the number of columns and rows of thumbnails that will be added per sheet thus letting you determine the size of the prints that work for you.

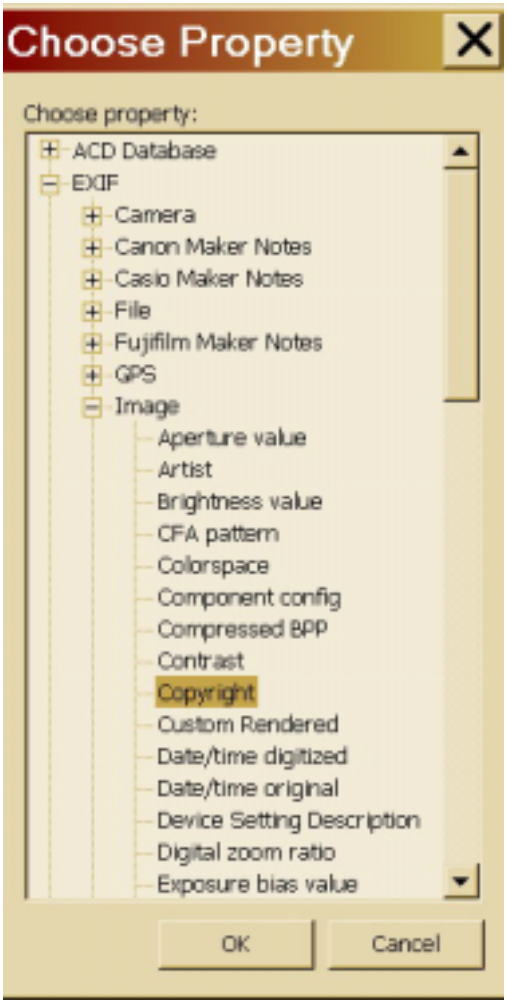
This example shows a full sheet of thumbnails set to display 3 columns by 3 rows so that each image is approximately 2.5 x 3 inches. Thumbnail spacing is allowed for both vertical and horizontal spaces between each thumbnail image.

The Caption feature is an easy way to add individual labels to each picture. Type in information that will consistent for all pictures such as the research group name. Then insert metadata information that will be unique for each picture. Here, we use file name, which already includes area, date, roll, and frame. We have also used embedded metadata for each image that is the assigned accession number for our database.

The Font options under the caption feature allow you to customize your labels to your liking for font type and size.

Using Metadata in Caption

This example shows the use of metadata tags that include the image properties where lat/long were entered for each encounter as well as the user comment metadata that includes information about the biopsies of individuals.

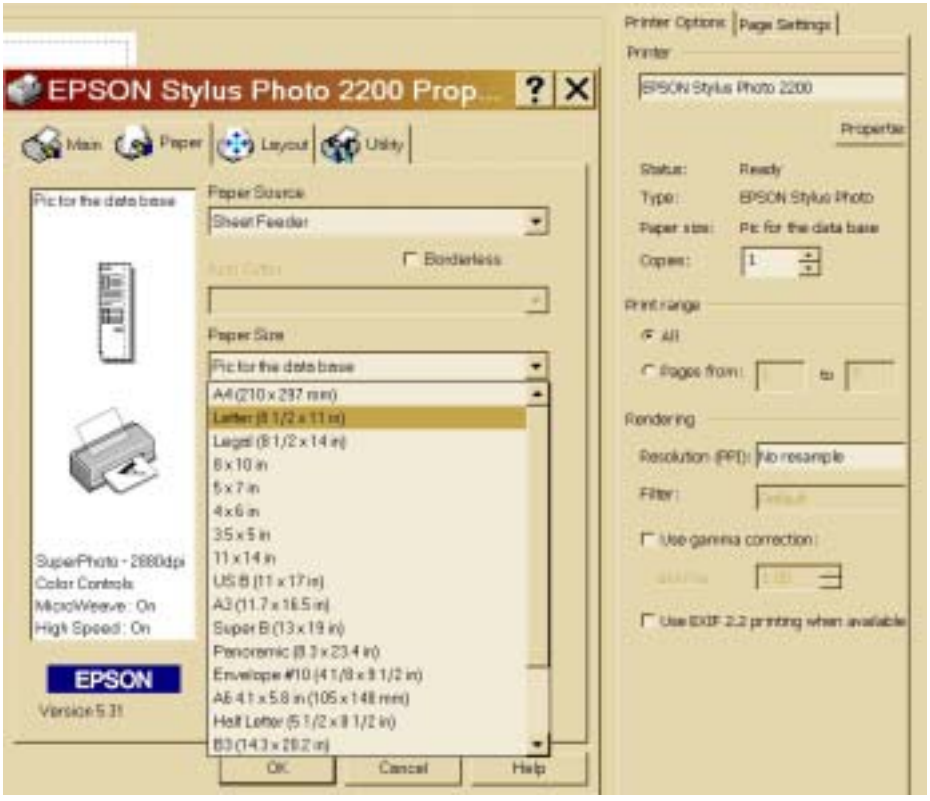


Printer Settings

From the Printer Properties on the right side of the ACDSee print screen, you can enter the printer settings for paper type, paper size, print quality and other printer options.

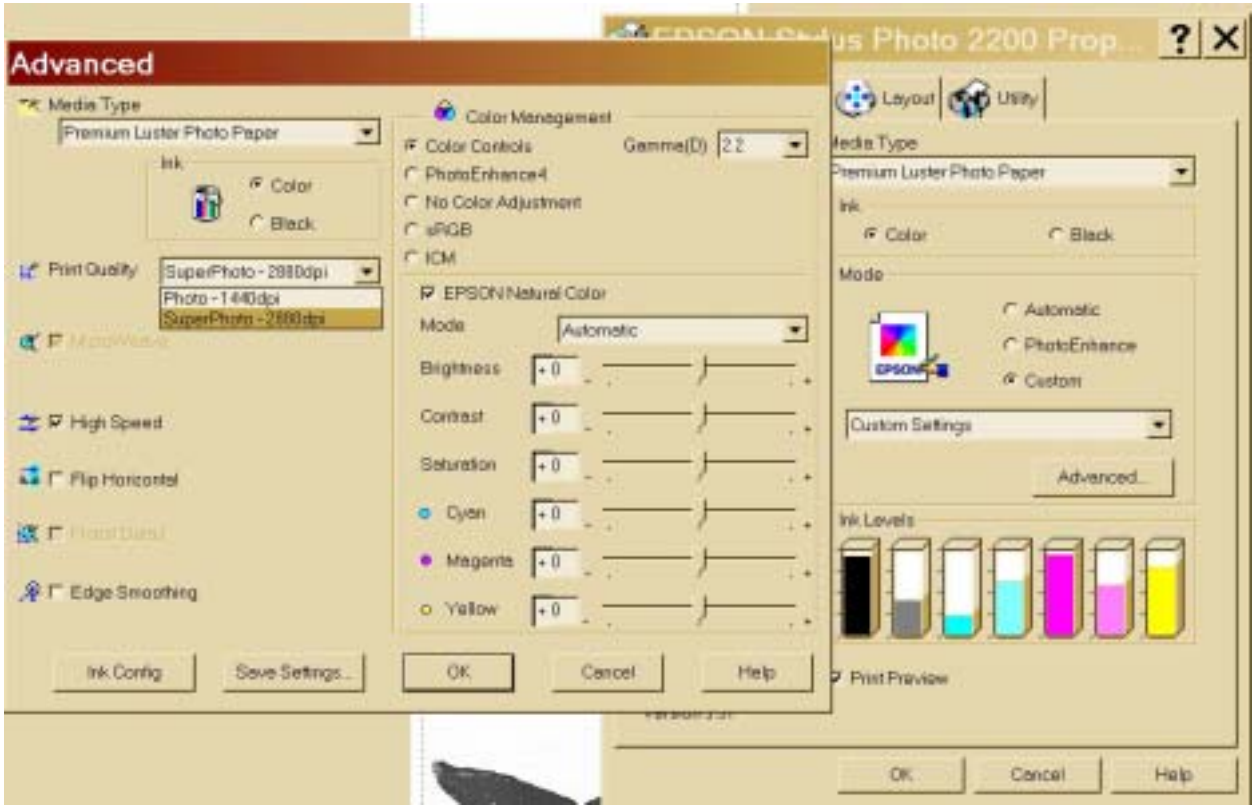
Choose the type of paper you are printing on from the media type drop down menu.

Choose the paper size under the paper tab of the printer properties

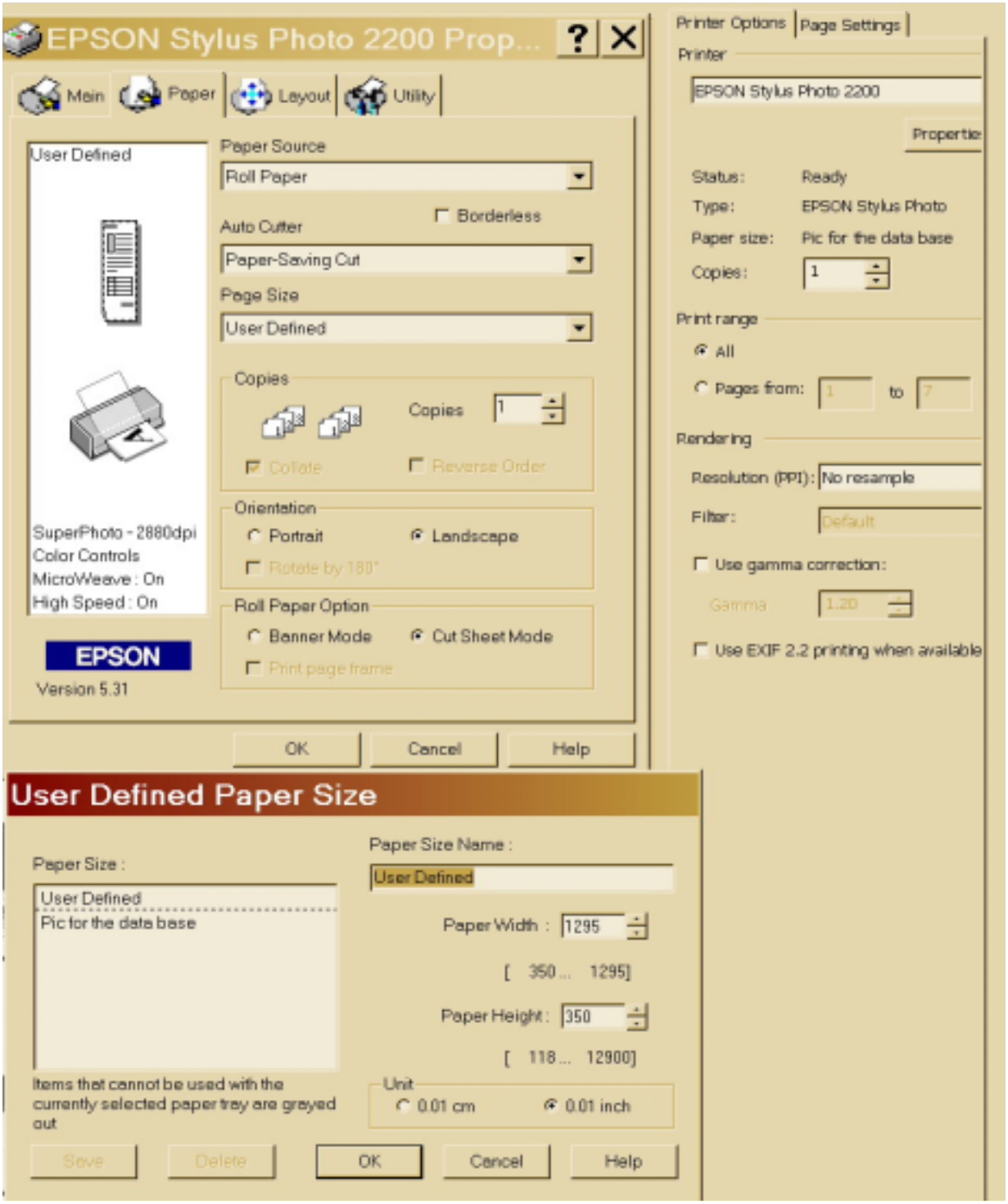


Advanced Printing Options

Set Mode to Custom and go into the Advanced menu options. This menu also allows you to select type of paper, but most importantly it allows you to set the print quality to “super photo” with a dpi of 2880.



Another option for paper type is roll paper. Since the Epson Stylus 2200 allows for roll paper, paper can be bought at a lower cost and printed to save on paper waste. Choose Roll Paper as your source, set Auto Cutter to Paper Saving Cut and define your page size to meet your size requirements for your prints.



We found by setting the paper width to 1295 and the paper height to 350 and printing in landscape mode, we can optimize our 2.5 x 3 inch prints on roll paper fitting 5 prints per “sheet”.